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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Stephen A. Owens
Director

February 17, 2005

Mr. Don Metzler
Moab Federal Project Director
U.S. Department of Energy
2597 B ¾ Road
Grand Junction, CO 81503

Re: Review of DEIS for Remediation of Moab Uranium Mill Tailings

Dear Mr. Metzler:

The Arizona Department of Environmental Quality (ADEQ) has reviewed the U.S. Department of Energy's (DOE) *Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah, Draft Environmental Impact Statement (DEIS)* which addresses contamination from historical uranium ore processing. The agency appreciates the opportunity to comment and has outlined its concerns below.

Preferred Alternative

The DEIS states that DOE has not identified a preferred alternative at this time. The State of Arizona strongly supports the complete removal of the tailings and contaminated materials from the site and believes either the Klondike Flats or the Crescent Junction locations are superior to the White Mesa Mill site due to transportation, disposal, and environmental justice issues.

Alternatives

The DEIS outlines two major alternatives:

- *On-site disposal*, which would involve stabilization and capping of the existing pile and would take 7-10 years to complete at a cost of \$166 million.
- *Off-site disposal* would take upwards of 8 years with costs ranging from \$329 to \$464 million, depending on the choice of final disposal location and transportation option. DOE has identified three locations in Utah as potential off-site disposal locations:
 - Klondike Flats, about 18 miles northwest of the site;
 - Crescent Junction, approximately 30 miles northwest of the site; and
 - White Mesa Mill, approximately 85 miles south of Moab and within 6 miles of the Ute Mountain Reservation and the communities of White Mesa and Blanding, UT.

While the costs for off-site removal are 2-3 times higher, the actual timeframe for completion of the tailings removal action is shorter. ADEQ strongly encourages the DOE to consider off-site disposal as the preferred alternative for the following reasons. The proximity of the pile to the

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Colorado River and the potential for the river to migrate are key reasons to consider complete removal. Secondly, the need for stabilization of the site and the fact that on-site stabilization *will not eliminate* the continual source of contamination to groundwater, makes off-site disposal clearly the more comprehensive and environmentally protective alternative, in the long-term.

Of the three sites analyzed, both the Klondike Flats and Crescent Junction sites are preferable to the White Mesa Mill location. While both Klondike Flats and Crescent Junction will require construction of new disposal cells, both sites are in remote, sparsely populated areas with large tracts of state and federal land. Both are accessible by rail which would expedite the removal versus transport by truck. The environmental impacts to both sites will be similar.

The White Mesa Mill site is an existing disposal site but it is also the farthest from the Moab location. Rail access is not available so transportation options focused on truck transport or slurry pipeline. Use of the White Mesa Mill site would result in unique cultural and environmental justice impacts given its proximity to the Ute Mountain Reservation and the communities of White Mesa and Blanding. In addition, there are rich cultural resources that would be disturbed preparing the site for additional storage and the pipeline corridor.

Lastly, DOE estimates the site contains 11.9 million tons or 8.9 million cubic yards of material. There is limited discussion in the DEIS as to how these values were obtained other than references to field characterization studies, DOE's experience with similar sites and historical data. While DOE acknowledges there could be a significant difference between the calculated and actual tailings volume, there is *no discussion* regarding the impact of quantity discrepancies on the remediation efforts. The pile characteristic uncertainties may not impact the final engineering design but could dramatically affect final surface remediation costs and scheduling. For example, if the DOE has dramatically underestimated the volume of the pile or contaminated soils, the amount and hauling time of cover material for on-site disposal will be affected. If off-site disposal is selected as the preferred option, these uncertainties could have considerable impacts on the transportation options.

Transportation

For off-site disposal, three transportation modes were evaluated: truck, rail and slurry pipeline. Truck transport would use existing US-191 as the primary transportation route for hauling contaminated materials off-site and hauling borrow materials to the selected disposal site. An existing rail line runs from the Moab site north along US-191 and connects near I-70. Rail access exists to both Klondike Flats and Crescent Junction but would require some upgrades and additional rail sidings. Rail access is not available to White Mesa Mill and the option was not analyzed for that site due to technical difficulties, potential impacts and high costs. Lastly, the DEIS looked at a slurry pipeline delivery to each of the potential disposal sites.

Given the usual highway tonnage limitations for truck transport, ADEQ questions DOE's time estimates for moving the material by truck, particularly in light of the uncertainties in the actual volumes. At a minimum, truck transport would noticeably increase truck traffic on US-191 for upwards of 8 years. If White Mesa Mill is selected, the truck traffic will travel through central

Moab, already congested with local and tourist traffic. The rail option, after the relatively minor grade improvements and additional sidings, could move vast quantities of material with little or no impact on US-191 and would seem to be the fastest and most efficient option. Given the types of pollutants being handled, the slurry pipeline does not appear to be a good option and at the very least, DOE should require additional investigation into potential environmental impacts in the event of inevitable pipeline leaks or failures.

Groundwater Remediation

Groundwater remediation will be conducted under both the on-site and off-site disposal alternatives. As presented in the DEIS, the proposed system will cost approximately \$11 million to design and construct, with an annual operating budget of over \$900,000. Construction will take approximately 5 years and the system will be in operation for 75-80 years.

The DEIS indicates that DOE proposes to implement an active remediation system to intercept and control discharge of contaminated groundwater to the Colorado River. Because there are no alternatives discussed regarding groundwater remediation, there are few details of the actual remediation plan. The DEIS indicates that ammonia is the major contaminant of concern, however, "roll front" uranium deposits typically contain a variety of mineral species. Other potential contaminants include uranium; its daughter products radon and radium; molybdenum; copper; selenium; vanadium; and arsenic. However, there is no discussion of impact of other contaminants discharging to the Colorado River. There is mention of the contamination plume but no details regarding size, movement, or levels.

Based solely on the overview in the DEIS, ADEQ has the following comments regarding the proposed groundwater remediation strategy:

» It is not clear why it will take up to five years to intercept and contain the plume, given the low recharge rate estimates. The DEIS states that the pump and treat system will operate for 75-80 years but elsewhere it states the "groundwater under the Moab site would return to background levels after 150 years." Does this mean that following the 75-80 years of pump and treat, an additional 70-80 years of natural attenuation is needed to restore groundwater to natural background?

» If the preferred alternative is off-site disposal, removal of the tailings will involve the stripping off of layers that will expose the underlying material to leaching. How will DOE, during the active removal, limit the exposed material to leaching of additional contaminants?

Surface Water Quality

Because of the vital role of the Colorado River to the lives of millions in both the Upper and Lower Basin States, ADEQ strongly supports the state of Utah's request that the *chronic* surface water quality standards be used to ensure protection of aquatic species. This is particularly true in the case of ammonia which is one of the most prevalent contaminants in the groundwater and is the constituent of greatest ecological concern that is discharging into the Colorado River and adjacent backwaters. The groundwater contamination has been ongoing for decades and has

been leaching into the river for decades as well. This has created a *chronic water quality condition* that acute water quality standards are not designed to protect against. The final Environmental Impact Statement should also Utah's surface water quality standards in addition to the federal Safe Drinking Water Act standards to ensure proper protection of human health, aquatic life and wildlife. The DEIS clearly states the aquifer is already compromised for drinking water purposes. Arizona is primarily concerned with attaining and maintaining a water quality that is protective of aquatic life and wildlife.

DOE's primary justification for using the less protective "acute" standard appears to be that use of the "chronic" standard would lengthen the duration of the groundwater remediation strategy. The DOE estimates it will take up to 80 years to reach the remediation target of 3 mg/L for ammonia but believes the remediation system will result in surface water quality that is protective of aquatic species within 5 years after the system begins treatment. It is unclear how these two statements can be true given that aquatic life can tolerate 3 mg/L as ammonia under a very narrow range of physical conditions.

The State of Arizona appreciates the opportunity to review and comment on this important project. As you know, Arizona counts on the Colorado River for fishing, recreation and providing drinking water to millions of its citizens. It is ADEQ's responsibility to the people of Arizona to ensure that water quality problems are identified and addressed appropriately, especially in a state like ours where water is such a precious and limited resource.

Sincerely,

A handwritten signature in dark ink, appearing to read "Stephen A. Owens", written in a cursive style.

Stephen A. Owens
Director